

JPRS 79848

12 January 1982

East Europe Report

ECONOMIC AND INDUSTRIAL AFFAIRS

No. 2219



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ALBANIA

SUCCESES, SHORTCOMINGS IN GEOLOGICAL PROSPECTING ACTIVITY

Tirana RRUGA E PARTISE in Albanian Sep 81 pp 15-24

[Article by Eshref Pumo: "New Horizons and New Ways in Geological Prospecting" passage between slantlines printed in boldface]

[Text] The geological service of our country is relatively new, the newest in Europe. Nevertheless, under the continuing care of the party, it grew and developed rapidly, and preceded the socialist industrialization of the country. If our country in the years of the party era recorded successes, incomparable with the past, in the development of industry, this fact was possible because of the correct and farsighted line perfected and executed by the party which created and developed, at rapid rates, the geological service of our country and the extraction and processing industry which played and will play a very important role in setting up and developing our multibranch industry with our own forces.

The geological workers, under the leadership of the party organizations, achieved very good results, especially, in the past 10 years in the field of prospecting, discovering and evaluating useful mineral ores of our country. Along with the further increase of reserves of useful mineral ores near the existing mineral-rich areas and new mineral-rich areas of petroleum, gas, chrome and copper, in the past 20 years, reserves of ferronickel and nickel-silicate, which guarantee the supply of the extraction and processing industry for a multiyear period, were discovered, placing our country in the third place in the world for chrome ores and among the main countries in Europe and the world for the production of nickel ores. During the same period, geological prospecting activities, especially, in the 1970's radically changed the conceptions about the capacity of coal in the country. Prospecting for phosphorites, bauxites, asbestos and other useful mineral ores is opening new roads for the development of the processing industry. Finding and discovering mineral-rich sources of clays, refractory and fire-resisting materials, marbles and decorative stones, drinking and industrial waters, mineral salt and so forth made it possible to create new branches for the economy and to insure revenues in hard currency.

During the period of about 30 years of the geological service many successes were recorded in the training of all levels of cadres who, confident in their own forces, solved complicated problems in the field of geological prospecting and discovering. Successfully confronting the difficulties of growth and struggling and rejecting the viewpoints and concepts of foreign geologists who, by various ways and forms ultimately tried to minimize or deny the prospects of the Albanian

subsoil, our geologists created correct and realistic views and concepts about the geological construction and metal resources of our country and, in their light, achieved important successes in the discovery of many treasures of our subsoil. The efforts of the foreign and domestic enemies to check our geological research activity failed shamefully. After the discovery of the great Khrushchevite treachery in the 1960's, our geological service recorded very great successes in prospecting for the main useful ores such as chrome, copper, ferronickel and others. Also, after the denunciation of the hostile activity of the Chinese revisionists, especially after the denunciation of the hostile group of Abdyl Kellezi, Keco Theodhosi and of other elements, our geologists further increased their drive in work and delighted the people and the party by discovering new important fields of petroleum-rich areas, of gas-rich areas and of additional useful ores.

The drawing up of geological maps of the scale of 1: 25,000 and 1: 10,000 for special areas, the generalization of the geological-technical knowledge of the country on geological maps of 1: 200,000, which will soon be put in the service of our geologists, speak in favor of the careful and fruitful work of our cadres in regard to a more complete and more accurate knowledge of the general geological construction of the country. In the achievements of these results, a noticeable contribution was made by the geophysical and geochemical studies which have been increased, quantitatively and qualitatively, from one five-year plan into another five-year plan. Also, the paleontological, minerological and petrographical definitions have further advanced the knowledge about the expanded geological study of the mineral-bearing capacity of the country.

Confronting the great results recorded by the geological service on the eve of the 40th anniversary of the founding of the party and of the Eighth Party Congress, we are proud of the very important measures adopted by the party for the continuing organization and strengthening of the National Geological Service. The present results in the field of geological prospecting have created a powerful support and sure premises for fulfilling the tasks foreseen by the draft directives of the Seventh Five-Year Plan, and also for further expanding the roads and opening new horizons and new ways in the 1980's and beyond.

/For Further Progress in prospecting and discovering useful ores/

The further and comprehensive improvement of the economy in the new five-year plan will be achieved through the rapid development of the different existing branches and the creation of new branches, on the basis of mineral raw materials coming from within the country.

The petroleum and gas industry, whose extra action will increase by 56-58 percent in 1985, will stand in the future, too, on top of all this development and improvement. This requires that the rates of discovery of industrial and future reserves of petroleum and gas be very high.

The results of the recent years in the prospecting of petroleum and gas strata prove that the future of our subsoil in regard to "black gold" [petroleum] is open. It is the task of our geologists, of the workers of the prospecting enterprises and of the institutions directly or indirectly connected with the great tasks of prospecting the oil-rich and gas-rich structures, which properly relying

on the present thematical generalizing work and on the experience acquired, especially, in the recent years, raising the complex of geological and geophysical works to a higher level and using technical and contemporary possibilities better and better and in a rational manner, with which the petroleum industry and its research study institutions are equipped, to struggle for recording and localizing the structures with prospect. This will make it possible, on the one hand, to speed up the evaluation of petroleum and gas-rich areas in the soil and to improve the effectiveness of deep drillings and the output of work for the discovery of new structures and, on the other hand, to increase the volume of complex prospecting operations in the sea, where problems and difficulties are greater, while our training and experience are still in the initial stages.

Very great tasks are assigned to geologists in the prospecting and discovery of coal reserves, whose extraction in 1985, compared to 1980, is scheduled to increase by 48 percent and with even higher rates in the distant future, because, in the coming decades, coal will play a very important role as an energy raw material, replacing petroleum and gas more and more which will be used in a more profitable manner as raw material for the chemical industry and other branches of the economy. For these reasons and in order to use coal not only as fuel, it is necessary, along with the invigoration of geological-discovery works for insuring industrial and perspective reserves with more rapid rates in the known mineral-rich areas and zones and in those near them that greater attention now be given to finding coal of higher quality.

The extraction of the main useful solid ores, such as chrome, copper, and ferronickel, in 1985 will be, respectively, 29 percent, 52 percent and 2.6 times more than in 1980. This sets forth before our geologists great and responsible tasks. In the light of the positive results achieved in recent years in chrome ores in Bulqize-Bater area and in the ultra-base areas in Tropoje, Shebenik and Pogradec; in copper ores, in the mineral-rich areas of Rubik, Kurbnesh, Perlat and in other places; in the ferronickel ores, in Guri i Kuq, Bitincke and elsewhere, all the opportunities exist with the geological works scheduled for this five-year plan, to guarantee the new reserves which will help the further development of the extraction of copper, chrome, ferronickel and nickel-silicate even after the year 2000. The further opening up of perspectives for these useful ores near the existing mineral-rich areas and in the new zones is scientifically based.

As a result of the determined work of our geologists, the correct guideline of the party that "our country is not lacking bauxites" was fully verified. During the past five-year plan, not only were important industrial reserves of bauxites discovered, but, also, the great prospects for this mineral ore for the economy of our country became apparent. Although, the industrial reserves and prospects for bauxites, known until now, guarantee the development of the aluminum extraction and processing industry, the future task of the geological service is the further increasing of the quantity of high quality reserves and prospecting in those zones and fields, unknown until now, where geological premises and data exist for possible findings of bauxite-rich areas.

Geological and generalizing research activities show that our country is rich in asbestos ores. Along with the asbestos-rich areas in Puke, Boboshtice, Qarrishte and other places, very interesting new zones were found which, in the

future, as a result of geological works to be carried out in them, will make it possible to further increase the quantity of reserves and improve the economic value of asbestos ores. The presence of accompanying minerals in asbestos ores further increases the value of the latter. Here, however, there are problems which have not been completely solved, such as, among other things, the technological studies for their processing and utilization.

In harmony with the rates of development of the extraction industry, geological data have been collected and premises have been clarified in regard to the possibility for finding other useful minerals needed for the various sectors of the industry and for further expanding the range of our exports. Thus, we may mention the argillaceous and fire-resisting minerals, mineral salt, and the new and perspective minerals of gypsum, dolomites and magnesites, marbles, decorative stones and construction materials, on the basis of which new industrial branches will be developed and new sources will be created or the existing ones will be expanded in order to increase the revenues in hard currency.

The fulfillment of the tasks assigned to the geological prospecting sector by the draft directives of the Eighth Party Congress for the Seventh Five-Year Plan will make it possible for the extraction and processing industry to increase rapidly on well based rates in the future. The fulfillment of the tasks of the plan for the first six-months of 1981 for the discovery of the main useful mineral reserves is a good starting point for fulfilling the 1981 plan and the entire five-year plan.

However, despite these achievements, the party teaches us not to be self-satisfied. This is not only because of the fact that the tasks are greater and more difficult, but also because, in some cases, there are deviations in regard to the fulfillment of the tasks and non-fulfillment in some indicators, especially, linked with the regular increase of reserves, with the fulfillment of the volume of drillings and with the timely execution of hydrogeological surveys during the discovery of mineral-rich areas and so forth. These shortcomings were also criticised during the people's examination of the draft directives for the Seventh Five-Year Plan, where concrete measures were set in order to eliminate them. Also, some technical and organizational measures were criticized and others were set in order to avert some shortcomings observed in some cases, for example, in the extraction of samples from drillings, in the execution of geological documentation and of the obtaining of tests, in the further perfection of drilling technology and in the improvement of the effectiveness of geological prospecting which, in regard to some useful mineral ores and in some enterprises, is still low.

During the past years, important steps were taken to invigorate the geological service in mines; however, one can still observe cases when the geological service is not at the proper level in some mines, and when the geological documentation is not always in order and systemized as required by the utilization of mines on scientific bases. Taking into consideration the fact that the mining geologist has responsible tasks so as to expand the life of the mine and to extract reserves with a minimum of losses in quantity and quality, it is necessary that the geological service in mines be further invigorated in all directions. The mining geologist executes his duty properly when he organizes the utilization of

minerals in an economic manner and in a scheduled manner and when he does not allow himself to remain in the position of a simple observer or of a registrar of minerals that are being utilized, but manages the current utilization of minerals and guides their future utilization and when he increases the quantity of reserves and the number of useful elements.

Achievements in engineering and hydrogeological studies to support constructional and agricultural operations are important. However, in these fields, too, shortcomings have been observed in regard to the execution of geological documentation on schedule and with good quality. From these shortcomings, the geological workers drew lessons and established tasks in order to improve the level of their engineering and geological studies. The new hydrotechnical projects to be added to our economy during this five-year plan, starting with the magnificent hydroelectric power project in Koman and Skavice and down to smaller projects, the important works for the systematization and expansion of ports, designing of railway and automobile roads and the construction of reservoirs, canals and of other important works for the further development of agriculture require not only a great number of surveys and conclusions of special responsibility, but also comprehensive training and accurate scientific experimentation under the conditions existing in our country. The many constructions in Karstic terrains, the supplying of drinking and industrial waters and other projects dictate the necessity to carry out special studies in the fields of karstology, geomorphology, of quaternary geology and of other similar studies which are at their initial stage; however, now we have the opportunity to drive them forward.

/Let us further expand complex and technological studies, properly basing geological works on scientific data/

Along with the solving of the present and near future tasks, the activities aiming at clarifying the more distant future tasks, in the light of which geological works will be better guided and better implemented, are of great importance. Without reducing the rate of prospecting for the useful minerals under utilization near the known mineral-rich areas and structures, the party has set the task so that research works for useful mineral ores, less known or unknown, such as in new areas, will be invigorated.

For the further clarification of the geological prospects of the country and in order to have the possibility of maneuvering in designing in regard to the development of the extraction and processing industry, which are rapidly developing, it is necessary that geological studies be more expanded and expanded at higher pace. Along with the physical volume of geological work, it is necessary for the geological workers to assimilate and fully implement the complex and progressive scientific methods for prospecting and discovering mineral-rich areas, so as to improve the effectiveness of their execution. Special tasks, it was stressed at the Tenth Plenum of the Party Central Committee, are assigned to the geological workers in regard to the evaluation of the prognosis of the perspective areas and zones, so that the geological service will precede production for a relatively longer period. However, the implementation of expanded geological studies, at the level of present achievements of science, and the discovery of subsoil resources at more rapid rates and with great effectiveness, are conditioned by the assimilation and complex utilization of sciences such as

geophysics, geochemistry and other sciences which today are undergoing great development and have promoted knowledge in regard to geology and useful minerals.

In prospecting for useful mineral ores in our country, various prospecting methods have been implemented, depending on the kind of useful mineral ores and on geological conditions of the milieu, starting with the simplest methods for the study of the sections of land where the people's researchers have made and are making a valuable contribution through the execution of geological excavations and the use of prospecting drillings, up to geological and geochemical methods for which specialized institutions have been created. Geophysical methods have been widely used in the study and preparation of petroleum and gas-rich structures (seismics and gravimetrics) and in the prospecting of mineral bodies of chrome, bauxites and phosphorites, and of copper-rich zones and so forth, utilizing, according to the case, gravimetric, electric, radiometric, and other methods.

In regard to prospecting for useful solid minerals, geophysical methods have preceded classical geological methods in many cases; while, in other cases, they have supported them, executing the complex of geological-physical works which helped to clarify the complicated geological situations. Nevertheless, this complex of studies still does not properly respond to the increasing demands for discovery of reserves in depth and in the new areas. In order to progress in accordance with the demands of the times, especially, to better solve the complicated problems of depth, it is necessary that more experimental works be undertaken, so as to find new methods in harmony with the geological construction of the special areas, with the kind of useful ore that is required and with the conditions of the relief and so forth. Geophysical works must be better organized and coordinated, starting with those covering large areas, with geological excavations on small scales and up to subsoil geophysical methods for solid ores.

Geochemical methods were introduced in the recent years for prospecting petroleum and gas strata, for prospecting the mineralization of copper and elsewhere. However, the lack of cadres and of experience hampered the execution of geochemical methods on a large scale. Concrete tasks have been set so that in the future these methods will be expanded more widely and more deeply in the prospecting of minerals, so that they will be tested under different conditions and, together with the geophysical methods and other geological methods, such as the petrological, structural and other methods, will better supplement the complex of prospecting methods so that geological prospecting and discovery will be implemented more rapidly and more effectively.

In regard to invigoration of geological prospecting, during this five-year plan and in the future, technological studies of raw material processing deserve to be given particular consideration. This is also because of the fact that, for some useful minerals, such as, for example, ferronickel, bauxites, titanite magnetites, asbestos, and gypsum ores, although important industrial reserves and prognoses have been insured, studies for learning their material composition and for finding the ways for their processing are still behind schedule, thus, creating a disharmony between geological results and technological studies. To eliminate this disharmony and so that the new minerals will be put to use for the people's economy, it is necessary that, starting from this five-year plan, technological studies be increased at greater rates than geological prospecting and discovery activities.

Prospecting for useful rich minerals with simple processing technology remains the primary task of the geological service workers. However, we cannot rely only on these minerals, because, in some cases, our mineral ores have a low content of useful ingredients or have a lesser known technology. There also are cases, such as, for example, in the mineral-rich area in Bitincke where two kinds of mineral ores are situated one on top of the other, the nickel-silicate below and ferronickel on top and, therefore, there would not be any economic profit if one of them was exploited and not the other. Also, at the bauxite-rich area in Dajti, different kinds of mineral ores are mingled and, therefore, cannot be exploited separately. In these cases, technological studies are of particular importance, because, it is only on the basis of the positive results that can be obtained from these studies it would be possible to judge the intensification of prospecting works, the order to the objects to be discovered and the effectiveness of geological prospecting as a whole.

Therefore, the discovery of technological patterns opens new roads and opportunities to geological prospecting and creates possibilities for a complex utilization of mineral raw materials in the service of the people's economy. Invigoration of technical studies, as is known, also aids in the transition, step by step, to the complete processing of mineral raw materials within the country, as was done with copper, ferronickel and so forth.

Geological tasks, from the simple ones to the complicated, scientific and accurate ones are, in regard to their character, works requiring high scientific preparation, self-denial and determination in order to achieve success; these are requirements which become more acute at the present stage of development of geological prospecting on a broad and wide basis.

It is a fact that until now very good results have been achieved in the knowledge of geology of our country, but mainly on the upper surface of our territory. Also, prospecting for useful solid mineral ores has been mainly concentrated on the mineral-rich areas opening on the surface or which are situated in less complicated geological-technological conditions. The task assigned for the future is to shed light on geological constructions and on mineral-rich capacities in greater depth and in more complicated prospecting and discovery conditions. In this direction, the geological workers have taken some initiatives and have achieved some results. The positive experience acquired during the past years in prospecting for structures of petroleum and gas-rich areas in the Mesozoic deposits in depth, in searching for chrome in the "blind" zone between Bulqize-Bater mineral-rich areas, in the reopening of prospects with wider horizons of the copper mineral-rich area in Rubik and so forth deserve to be studied attentively and conclusions must be drawn in order to further improve the level of comprehensive and anticipatory studies, so as to make a better contribution to the opening and widening of prospects for mineral resources.

Good work has begun in regard to the exchange of positive experience through the exchange of ideas in scientific sessions, conferences and various seminars. Thus, for example, the conferences organized in Fier on the problems arising from the prospecting of petroleum and gas structures, in Bulqize on the problems of prospecting for and utilizing mineral-rich areas of chrome, and in Shkoder, on the results achieved and prospecting for bauxites; all have helped to clarify the main

problems. The exchange of ideas in these conferences, based on analyses of achievements and on known shortcomings, has made it possible to acquire a rich material of great theoretical and practical importance which helps to promote the problems analyzed. One can find many solutions and ideas in the regional geological studies and in the implementation of the study themes organized at different governmental, ministerial and other levels, and in the various dissertations. However, in these subjects, there also are shallow and unexpanded works and recommendations which are not completely documented. Therefore, it is necessary that debates on the problems discussed be better organized and a social, correct and scientific exchange of ideas be encouraged in these open exchanges; for all these things, better individual preparation and a more fruitful organization are required.

Exchanges and different forms of scientific information, organized in cooperation with the various institutions, showing the results, positive experience and data of science and technology, help in forming cadres and in making them more capable and in creating and perfecting Albanian geological literature. This literature, in some fields, such as, for example, in those of geological studies and so forth, has a definitive character of the Albanian language and culture and, as such, has drawn the attention of foreign scientists who have received and evaluated it highly. This, however, must be perfected and systematized so that it will serve the students of higher schools and the training of cadres for efficiency through organized forms of specialization and of training which have been created or which will be created in the future.

Life has shown that to make proper contribution to the implementation of various studies, to prepare a scientific report or discussion, to draft a geological report or study work with some value and to become skilled or specialized in a definite field or area, therefore, to solve the present and future tasks in accordance with the requirements of the time, it is necessary that all the people, starting with the workers of the geological departments at the university or of the sectors of the research and scientific institutions and down to the team geologist, must nourish themselves every day with the latest developments of science and technology. We stress this because in this field there are erroneous concepts and practices and manifestations of coziness, empiricism, voluntarism and satisfaction with little. There are cases when various specialists complain that they have no favorable conditions or have no time to follow-up the latest developments of science. But, progressive experience shows that if the party recommendation is well understood, that is, that if one does not continually study, the tasks mentioned above cannot be fulfilled; therefore, conditions will be created and the necessary time will be found to study. Active involvement in present and future study problems, in solving technical and methodical tasks and in testing new geological, geophysical and geochemical methods obliges us to always keep the literature of science beside us and to continually expand our reading of it, especially, the basic formative literature which helps to further develop creative capacities and intuitions for scientific research, and to strengthen the imagination in order to shed more light on geological problems and unclear aspects.

The fulfillment of the great tasks scheduled for the new five-year plan require, first of all, that the very important recommendation of the party, that is, that we delve more deeply in geological sciences and in related sciences, be correctly

understood and implemented in order to properly understand the achievements of world science and technology, and to struggle for their use in accordance with the conditions in our country. So that the scientific thought may always lead us in any direction in such a manner that, as Comrade Enver Hoxha recommends /"we may better put science and technological progress in the service of the present and future development of the country, for the development of the economy, for the education of the new man and for the strengthening of the defense of the fatherland"/ (Enver Hoxha, "The Progress of the Country Is Inseparable from the Development of Science and Technology," pamphlet, p 4).

During this five-year plan, important progress will be achieved in the field of geology. Scientific thought will better support all designs, studies and achievements in the geological prospecting activity which will be carried out with our own forces, for the further clarification of the prospects and the economic value of subsoil resources.

The tasks assigned to the geological service of the country for the 1980's are great, but fully realizable. Their fulfillment requires the mobilization of all mental and physical capacities, the organization and coordination of the work of cadres and of the means, the follow-up and continual monitoring of their implementation, the execution of scientific discipline and the strengthening of the system of savings. It requires, above all, the further perfection of the leadership role of the party organizations for the fulfillment of the tasks of the Seventh Five-Year Plan in the field of geology.

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CSO: 2100/28

GERMAN DEMOCRATIC REPUBLIC

'REFINED METALLURGY' SEEN TO IMPROVE PRODUCTION QUALITY

East Berlin STANDARDISIERUNG UND QUALITAET in German Vol 27 No 7, Oct 81 (signed to press 27 Aug 81) pp 294-295

["In Focus" feature article: "Refinement--A Project of Economic Significance." A translation of a series of East Berlin EINHEIT articles on the subject is published under the heading, "Industry, Agriculture to Focus on 'Enhanced Refinement,'" in JPRS 79045, 23 Sep 81, No 2178 of this series, pp 67-90]

[Text] The higher refinement of raw and production materials took on high priority in the economic strategy for the 1980's concluded at the tenth congress of the SED. From each kilogram of raw and production material a maximum of high quality products is to be generated through highly trained labor. What is at stake will always be the unification of scientific-technical peak performance and optimal economic values, so as to assure a new high level of technology and the transitions to qualitatively new stages of production. This transition to highly refined production will be most apparent in the further course of our metallurgy.

Refined metallurgy can be defined as the production of metallurgic products of high utility value on the basis of efficient processing of raw materials from imports and domestic production with the most efficient use of energy and with the application of modern processes and technologies.

Refined metallurgy produces goods which possess superior mechanical-technological properties, evidence minimal deviations of measurement and form and are capable of high quality surface treatment. They display good reforming properties and can be further and efficiently processed with minimal tolerances on assembly lines and by robots. All products with high resistance to corrosion and fatigue and metallurgic product lines which make possible high labor productivity from the user in further processing, with minimal inputs of material and energy, can be regarded as refined.

The basic conception of the development of refined metallurgy through 1985 poses the task of developing, as quickly as possible, the percentage of qualitatively high-value, semi-finished products, especially for the construction and metal working industries. The production of refined rolled steel will be increased from 4.33 million tons in 1980 to almost 7.4 million tons in 1985. The refined metallurgic product in ferrous metallurgy will make up 80 to 90 percent of total rolled steel production and in nonferrous metallurgy will reach 90 percent.

The demands of microelectronics for semi-finished materials have priority for the further development of non-ferrous metallurgy. Envisioned is a six-fold increase in production of carrier strip metal for microelectronics as well as an increase of 215 percent for copper, brass and aluminum wire, particularly in fine and superfine gauges.

A further priority is an increase in the production of domestic raw materials and the attainment of the highest possible efficiency in their processing. New extraction procedures in mining, new technologies and maximal performance in driving galleries, new patented solutions in the dressing of ore and of a technological and technical character in the roasting of tin have made it possible for 80 percent of the GDR's tin requirements to be met from its own raw material sources. The directives of the tenth congress of the SED now set the task of completely meeting the GDR's requirements from domestic sources by 1985.

The expansion of tin production in the VEB [state-owned firm] mining and smelting combine "Albert Funk" is geared not only to this task but has the added one of extracting all by-products of economic value from domestic ores. Many more problems remain to be solved, for example, questions of energy substitution.

Refined metallurgic products being to the metal working and construction industries high efficiencies with respect to economies of material, improvement of mass/performance proportions and the heightening of labor productivity. Plastic coated moldings, strip and sheet metal from the cold rolling plant of the steel mill combine Ost have found application primarily in construction and consumer goods industries. They are corrosion-resistant, require no special paint application and, upon request of the user, can be produced as ready-for-assembly construction components.

In the course of the 1976 to 1980 Five-Year Plan, the high strength concrete reinforcing steel St T IV was gradually introduced in place of the reinforcing steel St A III. Its higher strength makes possible a 15 percent savings in steel used in the construction industry. When used in multi-purpose structures the savings in steel amounts to as much as a quarter.

Steels for massive cold forming make possible the effective use of material of up to 95 percent in the metal working industry as compared to other processes such as turning and boring. As against the application of separation technology, a three-fold increase in labor productivity can be attained.

The cold rolling mill of the steel combine Ost in 1980 achieved a production increase of 6.5 million square meters of sheet metal through rolling in the minus tolerance range, using the same quantity of material. From this additional production of sheet metal some 1.65 million refrigerator housings could be produced, with a simultaneous lessening in weight of the finished product.

At the experimental wire rolling mill, now in continuous operation at the steel and rolling mill Brandenburg, it was possible this year to produce 12,000 more kilometers of wire with the same quantity of material and with enhanced application properties in contrast to production on the former rolling mill.

The refined steel works "8 May 1945" in Freital developed a steel for the standardized parts industry with a three-fold greater strength, from which screws will be produced. As in the past, screws will be produced for use in machinery construction

in the traditional dimensions. Here, the metal working industry is becoming faced with the task of modifying standards and construction guidelines that will make it possible for project directors, designers and mechanical engineers to make full use of the possible material/economic efficiencies of improved materials. One step toward the utilization of these efficiencies is the cooperation agreements between the metallurgical combines and their clients.

The best experiences in metallurgy have been garnered by the VEB strip steel combine "Hermann Matern." Along with research contracts for surface-refined sheet metal and strip steel, client consultations and conferences have proved to be the most effective form of assuring the material/economic processing of these products. Their material/economic use is linked to a demonstrably higher quality of the final products because costly refinement technologies, like lacquering and coating of finished products, can be eliminated.

The starting point and the goal of all refinement measures must be economic results. Whatever the technologies introduced, to whatever degree the palette of products is enlarged, whatever objectives are hereby realized--all of this can only be assessed and compared within the perspective of economic results for the increase in the net national product and with that the national income, the expansion of exports and the improvement of supplies for the population.

What is at issue with higher refinement is the advancement of the production process to higher stages, for which quality work is already a self-understood precondition in the preliminary stages. Light weight construction as applied to machinery and apparatus construction can only be achieved if metallurgy creates its preconditions through the production of high-strength and corrosion-resistant steels and other materials. In this sense refinement makes itself felt in the entire economic reproduction process from the first to the last stage. As a result, a substantial part of the demands for scientific-technical performance devolves upon the metallurgical combines. This holds true for the qualitatively and quantitatively more demanding requirements of micro-electronics.

A chief task of the mining and mill combines will be the development of the highest application properties with a minimal use of precious metals. For example, the silver component in contacts and switch elements in 1970 was still 48.6 percent. It was possible to reduce this by 1980 to 13.9 percent by scientific-technical development. The goal is to reduce it by 1985 to less than 11 percent while improving the physical and electrical properties of these products.

The development of communications technology, of electronics in its various application realms and of microelectronics also demands new as well as familiar production materials in hitherto unknown dimensions such as ultraprecision foils, materials for micromotors, etc. One new material for application in low voltage switching components for electrotechnology, mechanical engineering and plant installations was able to be created with dispersion hardened contact materials. A savings of 6 to 15 percent of silver is achieved and other material substituted. Most of the mechanisms with these contacts have received the quality designation "Q." The savings in silver amounts to some 5 tons per year.

The higher refinement of raw and production materials poses new and greater demands upon scientific-technical work. Here, in a sense, is where refinement begins and here the future level of products and technologies is decided as is performance and efficiency. For that reason it is urgent that every combine work more vigorously toward implementing scientific-technical as well as economic peak performances. One visible expression of higher refinement is stage-by-stage improvement of the quality of production material so that in the end a maximum of high quality products can be produced per ton of material used.

The application of the strip casting process at the VEB combine Wilhelm Pieck in Mansfeld for example, which consolidated casting and warm rolling processes, made it possible to eliminate 4 process steps. The material employed per ton of cold strip sank by 110 kilograms or 5.7 percent, the labor investment by almost a tenth and the use of electrical energy by 550 kWh. In 1981 the combine produced, from one ton of production material, 14 percent more aluminum foil, 7 percent more copper wire and 3 percent more copper tubing than in 1980.

An example of progressive production process in ferrous metallurgy is the manufacture of thin-walled pipes in the pipe works IV of the VEB pipe combine at the Riesa steel and rolling mill. The workers at this plant have proposed reducing the weight per meter of pipe from 3.5 to 2.5 kilograms. By 1985 several additional thousand kilometers of pipe can be produced by means of this material-efficient mode of production.

Pipes with interior plastic coating from the pipe combine are another expression of high refinement. They can be used with a five-fold longer life span than traditional pipes in the construction industry for hot water supply.

Refinement requires overall quality production on a higher level. It also calls for important changes in the production profile of the national economy. With refinement a great economic program has been marked out. We have--as Erich Honecker declared at the 10th congress of the SED--no time to lose in bringing it to pass within the whole breadth of our economy. It corresponds to the conditions of the GDR, a highly developed country with relatively few raw materials and whose significant strength is a highly trained population, experienced in modern socialist production.

9878

CSO: 2300/74

MINISTER DISCUSSES CONSTRUCTION PROBLEMS, SHORTAGES

Warsaw FUNDAMENTY in Polish No 47, 22 Nov 81 p 3

[Interview with Tadeusz Opolski, minister of construction [MB] and the Building Materials Center [CMB], by Zygmunt M. Stepinski, Andrzej Warminski]

[Text] [Question] Mr. Minister, had you expected to be appointed to this post or did it come as a surprise?

[Answer] Each person has his own ambitions. That is normal. What is important, on the other hand, is that one's ambitions not exceed one's abilities and competence. No one forced me into it and there were no pressures. Why did I decide to take the job, especially when the building trade is in a situation whose description would be a truism? That decision arose out of the conviction that I am not alone and that we would succeed in setting up a team of people who want to and are capable of leading the building industry out into tolerably calm waters.

[Question] Do you not see a need for a change in your co-workers, for letting in a little fresh blood, ideas and energy for the common good? Several days ago the "Solidarity" National Coordination Commission for the Construction Industry decided on a vote of censure regarding the Ministry of Construction [MB] and the Building Materials Center [CMB]. It would seem, then, that the simplest solution would be to introduce changes in personnel and thus avoid the criticisms of the present operation of the Ministry.

[Answer] It is possible that there will be some changes in the staff, but I certainly do not foresee a palace revolution. In my judgement, there was nothing personal in the resolution of "Solidarity" and questions of personnel were certainly not the most essential. The criticism included in that resolution was provoked by the present functioning of the Ministry of Construction, which was--and I am greatly oversimplifying--a gigantic, low-efficiency construction consortium that operates on traditional, low-efficiency directive-distribution methods.

[Question] The Sejm has entrusted you with this position at a very tense moment. In connection with the overall situation in the building industry, "Solidarity" announced a one-hour warning strike. It is true that the situation never came to that, but there were conflicts. We are interested in the operational strategy of the new head of the ministry. Do you want to begin the clean-up of the building

industry by "putting out the fires," or do you right off intend to pursue general structural changes?

[Answer] Both one and the other. There is no other alternative. Unless we find a common language with the labor unions, we shall never get off the ground. We must obtain some credit on faith, even short-term credit, and then pay it back as quickly as possible.

[Question] It is well known that discussions have been taking place between a government committee, which includes yourself, and the "Solidarity" National Commission of Independent Self-Governing Trade Unions. Is there a chance that these will lead to a favorable conclusion?

[Answer] I am an optimist. I believe that a chance does exist for an understanding.

[Question] Mr. Minister, do you not think that the most effective means of winning confidence in the present situation is to implement the understanding with "Solidarity" signed more than a year ago?

[Answer] The understanding of 29 October of last year has not been realized in its most important points and requires full and speedy implementation. In my judgement, however, it is not that that lies at the base of the threat of strikes and the discontent in the building industry.

[Question] What, in that case, is the reason for the actions protesting the media?

[Answer] At present, the unions consider the most important matter to be the creation of conditions for continuity in production, for normal work.

[Question] How do you rate the possibilities for fulfilling this requirement?

[Answer] We have taken steps to increase allotments of essential raw materials--coal for the cement plants, electric power, fuels and steel.

[Question] Have they had any effect?

[Answer] Gentlemen, do not push me to the wall, for certain matters have not yet been fully coordinated. I can say, however, that we will receive supplementary allotments for this year. Their purpose is to provide immediate improvement in the problem.

[Question] Then there is a chance for immediate improvement. Does this mean that the building industry will not be hit hard by reductions in employment? People are afraid that they will be out of work.

[Answer] Reductions cannot be avoided, but I would not hazard a guess as to any concrete number. However, we have to seek those solutions that do not carry negative consequences, that will not lead to a significant number of people leaving the plant.

[Question] How do you view the situation?

[Answer] We are working in three phases. First, a considerable number of people who will leave government construction enterprises will have to find employment in cooperative and private enterprises, which satisfy a considerable portion of the demand of society for construction services.

Second, we are counting on exports. One thing, however, must be made clear now. With the present shortage of building materials in the country, this boils down only to the export of labor. One might say that these are trips for "seasonal labor," only they are organized by the government and thus ensure the jointly recognized conditions of labor. However, this will not solve the employment problem.

[Question] It will not solve the problem, but we have indications that at our building sites in the Arab countries, Philipinnos and Portuguese are employed. Why is this?

[Answer] Because we have a shortage of skilled workmen in certain fields of specialization, such as carpenters, masons and plasterers.

[Question] Why is there a shortage?

[Answer] These trades and crafts are scarce even here at home. It is all the more the case at building sites abroad, for the domestic enterprises are very unwilling to part with them. And here I should like to move to the third phase proposed. Well, we are considering training a portion of the workers during the winter season, when the construction industry is dead. We would hope that they would attain competence in the most needed specialities during this time. This will become more and more necessary, because we must more energetically set about making repairs and modernizing.

And here the next problem arises--introducing a uniform system of remuneration throughout the entire building industry, without regard to ministerial affiliation, as well as ending the disproportion in wages that arises in individual specialities. We are counting on the actions taken in this area winning the approval of the work force.

[Question] We have devoted a great deal of space to immediate actions. Let us now talk of what awaits us in the year to come.

[Answer] In the present crisis situation, the most important task is to halt the regression in the building industry. In 1982, this must be our minimum program. After all, we have been falling back steadily since 1978.

[Question] For the people, what is important is not the amount of goods, but simply shortening the waiting time for an apartment. Does this mean that next year we will build an equally small number of apartments?

[Answer] In the construction industry there is a chance that greater resources will be assigned to the most pressing social goals--apartments, hospitals, economic and service facilities, schools and land development. What is indispensable, however, is the proper distribution of all the resources which will continue to be divided up next year. They must be directed to a specific purpose.

Obviously, this is a temporary system, conditioned above all by the shortage in raw and other materials. Following the full implementation of economic reform, central distribution will be done away with.

[Question] We have a shortage in coal, energy, tar paper and brick. Of virtually everything. Do you see any possibility for radical improvement?

[Answer] Next year we want to increase the production of basic construction materials. To what extent, I am not yet in a position to say. But, after all, the economy functions on a basis of communicating vessels. There must be a uniform level in these vessels. Only this can ensure an improvement in supply, which everyone is complaining about. I shall give you an example. This year we were capable of producing more than 200 million m² of tar paper, but actually produced only 150 million, because we lacked asphalt and paper board.

[Question] We complain about the shortage of materials, which certainly would not have occurred if many years ago we had not liquidated private and cooperative factories, e.g., brick-making plants.

[Answer] I share that view. For that reason I also pin great hopes on the reactivation of plants producing construction materials, primarily from local raw materials.

Today it is generally well known in what short supply, for example, brick is; nevertheless, in our country there are around 100 old brick-making factories that are now not operating. We have to create credit terms, supplied in coal and energy, in order to reactivate their production. We are counting on these small factories providing a total production that will be quite significant in the overall balance of materials. The principles must be in effect that will generate the earning capacity for resuming this type of production.

[Question] We are also dealing with the creation of appropriate schemes for running private and cooperative construction enterprises. What role will the Ministry play in that?

[Answer] The Ministry will have to consider methods for realizing the social goals defined by the social and economic central plans, both yearly and long-term. As a consequence, the necessary organizational solutions will be initiated and the conditions created for running all of the socially indispensable units of production in the fields of construction and building materials. Let me add that I have already currently participated in making the decision to reactivate the Communal Construction Enterprise in Warsaw.

In the very near future, when certain raw and other materials will still be temporarily distributed, we shall be guided by the social usefulness of jobs without regard to the character of the enterprise—work contractor relationship.

[Question] What functions will it fulfill in connection with the change in the status and structure of the Ministry?

[Answer] We are supposed to be a government administrative agency with a two-fold legislative operation: to initiate (creating conditions for the proper running of

the construction industry, for forecasting and studying the market, and thus creating mechanisms that permit the development of that subsector of the economy); on the other hand, as they say in the jargon, to fulfill the role of construction policeman (compliance with legal acts, but obviously also with the principles of the building art). Without doubt, it is one of the most effective vehicles for improving the quality of the building industry.

[Question] The solutions presented here are model-types. Before they are functioning, a great deal more time will elapse. How long?-it is difficult to say in detail. There is, however, a need to undertake pressing immediate action. How do you view, for example, the question of dividing the property among the individual firms in the initial period of functioning or reform? And, after all, what sort of division should there be?

[Answer] You gentlemen want ready formulae from me. And I do not have them at this point. And I think that you would not take me seriously if I were to pull them, as it were, out of my sleeve. And on top of that, after only a few days of heading up the ministry. In this field there cannot be only one scheme. Experience will show which solutions will be adopted. In my judgement, in this area enormous flexibility is required, along with full knowledge of local conditions. This flexibility, by the way, will be required not only for the building industry, but also for the other subsectors of our economy.

[Question] Mr. Minister, all of the enterprises will shortly be independent, self-governing and financially independent. Some directors of construction enterprises panic at the very thought of that.

[Answer] Self-governance and independence are already regulated by appropriate laws. The situation is worse with self-financing. First, there is no law; second, doubts are on the increase. You can ask me, gentlemen, who will pay the debts of these enterprises, what of the agreements concluded many years ago and never fulfilled, what about defects in finished jobs that have to be repaired at our own expense. And I could go on.

[Question] An unusually difficult transitional period awaits the enterprises. How are they to be helped?

[Answer] All firms are supposed to be guaranteed--up to a point--equal conditions for starting up. Once again, however, I do not have a ready formula. On the other hand, I can assure you that we have submitted the needs of the enterprises in that area. At the present time, the means for satisfying those needs are being urgently considered. I hope that these solutions will shortly be worked out by the Ministry of Finance and then issued by the Council of Ministers.

[Question] Are you optimistic in general?

[Answer] Yes. Otherwise I would not be sitting here and talking with you gentlemen.

[Question] Thank you for talking with us.

POLAND

ZSMP-FDJ CONTACTS REPORTED

ZSMP Visit to East Germany

Warsaw SZTANDAR MŁODYCH in Polish 27 Oct 81 pp 1, 5

[Article by Jerzy Weber, permanent SZTANDAR MŁODYCH correspondent in Berlin]

[Text] A ZSMP delegation, led by the chairman of the Main Board, Jerzy Jaskiernia, made a brief working visit to the GDR. The delegation was received by Paul Verner, Political Bureau member and SED CC secretary. The main subject of the meeting was the socio-professional initiatives of socialist youth organizations within the workers' and rural communities of both countries.

The ZSMP delegation was hosted by the Central Council of Free German Youth--FDJ. On the part of the hosts, the following participated in talks: Egon Krenz, Central Council first secretary, Wolfgang Herger, director, SED CC Youth Department and Hans Sattler, chief of the Office of Youth Affairs under the Council of Ministers. Questions associated with continuing ZSMP-FDJ cooperation were primarily discussed, given the new organizational conditions existing in the Polish youth movement with the dissolution of the FSZMP. The hosts broadly informed their Polish guests about the endeavors of the FDJ in the field of mobilization of GDR youth in the name of implementing the program of the 10th SED Congress and the resolutions of the last FDJ Parliament. The Polish delegation briefed their hosts concerning the program of ZSMP tasks following the fourth Plenum of the PZPR CC.

In a joint communique adopted following the talks, it was stressed that the meeting which had taken place was an expression of the friendship of PPR and GDR youth which has grown out of the history of the building of socialism in both countries. The development of fraternal relations between the youth of both countries, the communique states, is of great significance to the continued strengthening of friendship between the youth of countries of the socialist community to consolidate and defend socialism and peace in Europe.

The ZSMP and FDJ consider one of the mainstays of their activity to be fraternal relations with the Lenin Komsomol and other organizations of socialist countries.

The ZSMP delegation likewise met with the FDJ aktiv in Berlin's Wilhelm Pieck cable factory.

We asked Jerzy Jaskiernia, chairman of the ZSMP delegation, for a general evaluation of the GDR visit:

"I would like to stress that, despite the difficult situation in our country, FDJ-ZSMP contacts are thriving. The current visit is the third in a series of visits at the central level in the course of the past 4 months. We concerned ourselves with many issues. We spoke a great deal about youth law in operation in the GDR and the operational principles of the Office of Youth Affairs under the GDR Council of Ministers. It is a well-known fact that our union has made a proposal to appoint a similar office in Poland.

"The bulk of the time during the talks was spent, of course, in discussion of the question of the development of bilateral relations, particularly of decentralized contacts between the two unions. We came to the mutual conclusion that there is a need to update the agreement concluded between the FDJ and the FSZMP and to adapt it to the new organizational conditions existing within the Polish youth movement. We likewise broached questions associated with the effect of events in Poland on the so-called German problem and issues of the worldwide youth movement, particularly in the context of attempts to break up the international student movement.

"I would like to make special note of our hosts' cordiality, our farreaching concurrence of political opinions, our readiness to continue cooperation and their genuine interest in our affairs. In my opinion these things are essential from the viewpoint of the political vision of events in our country which is taking shape in the GDR."

FDJ Visit to Warsaw

Warsaw SZTANDAR MŁODYCH in Polish 12 Nov 81 p 4

[Interview with Ellen Brombacher, first secretary, FDJ DC [District Committee], GDR by Kazimierz Zglejszewski; date and place not specified]

[Text] At the invitation of the Warsaw Board [ZW] of the ZSMP, a delegation from the District Committee of the FDJ is visiting the capital from Berlin. We requested a statement from the chairperson of the delegation, first secretary of the FDJ DC, Ellen Brombacher.

[Ellen Brombacher]: I am very pleased to be in Warsaw, where we are always very cordially received, both by our friends from fraternal youth organizations and by our city hosts. Today we were received by the mayor of Warsaw, Jerzy Majewski. During this meeting we had an opportunity to become more familiar with the problems of your capital. We have also been the guests of the chairman of the Main Board, Jerzy Jaskiernia, who briefed us concerning the current tasks of the ZSMP in the context of the resolutions of the fourth and fifth Plenums of the PZPR CC and also informed us about preparations for the December convention [sejmik] of youth organizations of socialist countries. The idea of inviting the representatives of youth organizations to Poland arose during a recent visit made by Jerzy Jaskiernia to the GDR and out of discussions with the first secretary of the FDJ Central Council, Egon Krenz. Thus, it is a joint initiative. We also spoke of the

need to develop ZSMP-FDJ contacts at the district level. A positive example of these contacts is the relations which exist between Warsaw and Berlin.

[Question] In the GDR there is only one youth organization, the FDJ, while we have several. Do you anticipate meeting with the representatives of the other organizations?

[Answer] We are the guests of the Warsaw Board of the Union of Socialist Polish Youth and for the present we do not plan any contacts with other youth organizations active in the Warsaw district.

[Question] What is the basis of cooperation with the ZSMP/ZW?

[Answer] We have had very positive experiences in many fields, including tourist and cultural exchange and ideopolitical work. Other district organizations can benefit from these experiences. I am hopeful that the current visit will lead to the continued development of our contacts. We see the opportunity of expanding tourism, of increasing the number of persons for internships or contractual work and the hosting of more frequent meetings for the purpose of exchanging experiences gained in our political activities.

I would like to add that I am delighted with the possibility of meeting with the secretary of the PZPR Warsaw Committee, comrade Stanislaw Kociolek. We are very interested in the current tasks of the party following the Fourth and Fifth PZPR Plenums, and in the problems of party-youth organization bilateral relations.

[Kazimierz Zglejszewski] Thank you for the interview.

Results of ZSMP-FDJ Contact

Warsaw SZTANDAR MŁODYCH in Polish 19 Nov 81 p 4

[Article by (kaz)]

[Text] Last week, at the invitation of the Warsaw Board of the ZSMP, a delegation of the Berlin Committee of the FDJ visited the capital (we published an interview with the chairperson of the delegation, first secretary of the FDJ District Committee [DC] Ellen Brombacher in SZTANDAR MŁODYCH, 12 November 1981). A concrete result of this visit has been an agreement concerning cooperation between the FDJ/DC in Berlin and the Warsaw Board of the SZMP for the year 1982.

In addition to continued, traditionally favorable contacts in the area of the exchange of experiences in ideological-upbringing work in the communities of working and village youth, cooperation in the field of the development of science and technology will be expanded, with special consideration to be given to young inventors.

Following the conclusion of the voivodship edition of the Young Masters of Tomorrow Competition, the ZSMP/ZW delegation will depart for Berlin. FDJ/KO representatives on the other hand, will arrive in our capital for a summing up of the Young Masters of Technology Competition.

For the purpose of increasing tourist exchange and organizing additional trips to Berlin and Warsaw, both organizations will carry out a continual appraisal of youth tourist bureaus. Discussions with JUVENTUR [Office of Youth Tourism] and its German counterpart are already underway.

Contact between the FDJ and the ZSMP is not limited merely to contacts at the central and voivodship levels. Closer cooperation between basic echelons is likewise needed; the signing of agreements between regional and factory organizations is proposed.

During the course of working discussions, questions of sending interns to the GDR during vacation periods were also broached, as were guarantees of seasonal or contractual work for youth groups from Warsaw and the Warsaw Capital voivodship organized by the ZSMP/ZW. The Berlin FDJ organization has promised to support the ZSMP endeavors.

The Warsaw Board is conducting similar discussions with organizations in Hungary and Czechoslovakia. From an organizational viewpoint, the matter of such group trips will be all set up when the pertinent agreements are signed between the ministries.

8536

CSO: 2600/99

FACTORS TO BE CONSIDERED IN IMPROVING PLANNING FUNCTION

Bucharest ERA SOCIALISTA in Romanian No 17, 5 Sep 81 pp 4-6, 44

[Article by Dr Iosif Dumitru Bati: "Equilibrium Problems in the Economic Growth Process"]

[Text] Under any political regime, the distribution of means of production and work force among production branches and spheres, as well as the organization of socioeconomic activities according to needs of society, are objective necessities. That is why proportional development is a compulsory necessity, implying the assurance of a correlation between social supply and demand, which in final analysis signifies general economic equilibrium. This equilibrium must be understood and achieved as a dynamic concept, so as to provide maximum satisfaction of social needs, whose volume and structure are constantly changing.

It is well known that the shares which are formed in our socialist economy, and which lie at the basis of general economic equilibrium, are of a planned nature. Consequently, one of the most important demands of planning methodology is to assure in the unified national plan of socioeconomic development, the necessary dynamic shares, and to maintain them at an appropriate level. These shares naturally change with the development and improvement of production forces, and in keeping with society's needs and capabilities. The foundation of these shares therefore implies an optimum correlation of production and consumption; the rational utilization of natural and labor resources; a balance between production capabilities, raw material resources, and the labor force; a more rapid growth in the production of technologically progressive sub-branches which generate relatively reduced specific consumptions; and harmonious and efficient development in all zones, thus assuring rates of development in accordance with needs at each step.

Imbalances can also occur in the development of the national economy, particularly resulting from the failure to achieve some plan indicators. They can arise as a result of natural disasters (floods, earthquakes, and other exceptional circumstances), or of an insufficient knowledge of situations, possibilities, and demands of the economy, or even of planning errors. These imbalances can and must be eliminated by improved methods of planned management, and by raising the scientific level at which plan decisions are made, correctly applying for this purpose the principles of worker self-management and economic-financial self-administration, as well as by assuring material and financial resources of rational magnitudes.

The complex problems of general economic equilibrium and of improvement planning, must of course be approached in the spirit of present social needs and of the aspirations of the working masses and our entire population. "It is entirely evident," Nicolae Ceausescu stated in his speech for the 60th anniversary of our party, "that the great discoveries of science and technology, and of human knowledge, lend new dimensions and allow a new understanding, both of natural laws and of social ones. We must not fear when any one law, or any one belief about socioeconomic development or the party, must be changed. This is an inherent truth of social dialectics." In this light, there appears a particularly strong need to conduct a dynamic study of Romania's economic reality, and on this basis, to multiply and deepen analyses of the situation in the economy and its sectors, to critically assess the phenomena and processes that are taking place, and to disclose that which is positive and negative, seeking the formulation of methods for increasingly better foundation of decisions, so that planned management will assure the maximum measure of general economic equilibrium, contribute in greater measure to the rational utilization and superior valorification of material resources and manpower, as well as improve the standard of living.

Last year saw the end of the 1976-1980 five-year plan, an important stage in the building of the multilaterally developed socialist society. The statement regarding the fulfillment of the plan stresses, as a predominant characteristic of the Romanian economy, the transition from extensive to intensive development, the emphasis placed on qualitative aspects, and the increased efficiency in all areas of activity. It points out the efforts made to consistently fulfill the party policy of socialist industrialization of the country, modernization of the production structure, superior valorification of material resources, and powerful development of agriculture. At the same time--in the words of the statement--a number of shortcomings and weaknesses occurred in some sectors, which, had they been avoided, would have allowed even better results in the country's socioeconomic development.

There is no doubt that significant growth rates were obtained for most industrial products during the five-year plan that closed, even though the plan's provisions were not fully achieved. The failure to reach the 1980 levels stipulated in the five-year plan for some major products in the extractive, metallurgical, machine construction, chemical, and food industries, has created difficulties in the smooth conduct of material production and investments, as well as in providing the necessary goods for domestic and foreign markets. This situation was due to delays in placing in operation some production capabilities, failure to reach planned parameters, improper use of some machines, tooling, and installations, as well as some shortcomings in the organization of production and labor.

During the five-year plan that just ended, agriculture obtained an average annual grain production of 19.4 million tons, or 4.5 million tons more than during the 1971-1975 five-year plan. Similar increases were recorded for the production of technical crops, potatoes, vegetables, fruits, and grapes. In animal farming, total numbers were increased for all species, and particularly for pigs, sheep, and fowl. These important achievements were obtained even though the plan's figures were not met for vegetal products and animals, except in the case of egg-layers, for which the plan was surpassed.

The fulfillment of the agricultural production plan was undoubtedly negatively influenced by the unfavorable climate of recent years. But as Nicolae Ceausescu has pointed out, the main cause for these shortcomings can be found in organizational defects in production management and organization, in serious bureaucratic manifestations in the activity of central and local agricultural organs, in the overconcentration of the labor force on unproductive tasks, in a weakened control over the manner in which are fulfilled the plan provisions, the country's laws, and party decisions, as well as in serious deficiencies in the distribution of material means and human resources.

The situations described show that reality has at times been different than planned. We believe that in some cases, along with other factors, these phenomena have been based on an inadequate knowledge of the situation, and of economic needs and possibilities. To the extent to which these objective needs are not taken into account, the economy is exposed, more or less intensely, to uncontrollable forces, and the direction of economic processes is made more difficult.

It is well known that the law of planning establishes the obligation that the foundation of production within the unified national plan for socioeconomic development, begin by assuring the distribution of production through economic contracts to be signed in June of the current year for the year to follow. The rigorous fulfillment of this legal obligation is intended to contribute to the proper and timely preparation of product fabrication, the satisfactory pursuit of technical and material supply, and finally, to the steady and satisfactory fulfillment of the plan.

Because the dynamic development of our national economy is based on a broad investment plan, new production units have been placed in operation every year. In planning practice, the production plans for these units are based on the provisions of approved technical-economic documentation. However, experience has shown that the approved technical-economic parameters are often achieved with long, and even very long delays. An analysis of the new major industrial production capabilities has shown that during last year, a number of units did not fulfill their established technical-economic indicators. The achievement of these indicators and the elimination of negative influences demands that some requirements of the highest importance be satisfied without fail; they are: supplying raw materials in time and according to stipulated structures; unconditional guarantee of production distribution on the basis of contracts negotiated in time; adequate operation of equipment and installations; availability of stipulated spare parts; assuring the presence of workers and their suitable professional qualification; effectively adapting technical-economic indicators to phenomena that may arise, such as changes in production models determined by consumer demand; carefully monitoring the fulfillment of all indicators; formulating and efficiently applying effective measures to prevent eventual malfunctions; and so on.

It is not always recommended to follow the trend of some enterprise managers and other staff members, which is to assume the highest possible financial obligations, using the argument that even if these are not met, the ensuing growth would be higher than if the tasks had been more moderate. Forcing production growth without a solid foundation and failing to fulfill a number of indicators--in some cases to

an appreciable extent and consistently--have in turn generated the practice followed by some units in the economy, including ministries, to assign the largest portion of the production growth to the second half of the year, or even to the last quarter, and within quarters, to excessively load last months. As Nicolae Ceausescu has stressed at the Workshop of the Central Committee of the RCP, held at the beginning of June of this year, this mistaken practice must be thoroughly eliminated.

The fulfillment of the plan indicators, as a condition for equilibrium in the process of economic growth, is closely associated with the judicious utilization of some economic-financial leverages available in our economy, including those of material incentives. Experience has shown, especially during the generalized application of the new economic-financial mechanism, that wherever these leverages are well known and used, the fulfillment of the plan is increasingly good. For instance, the fact that some forms of incentive remuneration did not receive the anticipated wide application, or that their area of inclusion (global contract, agreement, and so on) was restricted in some places, goes a long way toward explaining a number of shortcomings which arose in the utilization of fixed assets, in achieving labor productivity increases, and in reducing production costs. The shortage of qualified workers in the extractive industry, in assembly and installation, in steel plants, and in heavy trades in general, as well as the persistent fluctuation of these workers in some branches, cannot be considered as independent of the shortcomings in the area of material incentives.

These are realities which demonstrate that some elements of the work remuneration system, and to a large extent, the manner in which they are applied, do not yet contribute as they should to attracting and stabilizing the work force in certain branches of the economy and in trades, and to reducing work force fluctuations, nor does it sufficiently encourage higher qualifications and economic efficiency. As indicated by Nicolae Ceausescu at the Second Congress of Workers' Councils, improvements in the forms and contents of some material incentive leverages, and their correct application, could make a decisive contribution to fulfilling and surpassing the plan's provisions.

The planning activity of course assumes the existence of a well founded and sufficiently flexible system of indicators, to reflect basic movements and shares in the national economy. The number of compulsory plan indicators has increased in recent years, especially in the area of material balances, specific consumptions, investments, labor and remuneration, efficiency, and so on. Practice has shown that this increase in the number of indicators has not always and everywhere been accompanied by improved plan fulfillment and higher economic efficiency.

It is well known that our country has had considerable success in developing its production force and improving the standard of living. Over the years, extensive experience has also been gained in planning the national economy by applying the principle of democratic centralism. A realistically formulated plan, using the positive experience accumulated with time, enables the mobilization of reserves available in the economy, while assuring sufficient adaptability to fight and successfully stem the negative phenomena which to some extent have also been experienced here, phenomena generated by the oil crisis, the shortage of raw materials, the harsh competition, and the contradictions without number in the world economy.

Positive effects will be obtained by applying the indication of the party leadership, regarding a more judicious blending of centralized planning of the economy with enterprise autonomy, based on the principles of worker self-management and economic-financial self-administration, and greater encouragement of initiative on the part of workers, so as to obtain superior economic-financial results. In this way, planning maintains and strengthens its primordial role as instrument for managing the economy and the units which compose it. I believe it is useful to constantly remember that in our party's concept, a plan can be considered as viable and realistic when it is capable of efficiently mobilizing the huge mechanism of the national economy and the energy of which man is capable. With great perseverance, Nicolae Ceausescu insists on the need to formulate a balanced, realistic, and efficient plan, as a fundamental condition for the proper operation and application of the principles of self-management and financial-economic self-administration in all units of the national economy.

As the prices of raw materials have climbed throughout the world, and because of currency shortages, it has appeared necessary to assure a maximum growth in the domestic production of raw materials and a maximum valorification of the material and human resources available in our economy. Of particular importance in this respect is the orientation provided by our party's leadership and its secretary general, regarding the priority sectors for the current five-year plan. "We must place in the forefront," Nicolae Ceausescu has emphasized, "a higher production of raw materials, and in particular of oil and coal, and of other energy sources, while assuring a stronger development of agricultural production; these two sectors have priority, since they play a decisive role in the development of the economy and of society, and in fulfilling the plan for the entire five years."

The priority development of these production branches has of course implied the judicious foundation, by means of the plan, of their material base, as follows: discovering useful hydrocarbons and minerals, and work to exploit them; providing chemical fertilizers, pesticides, and herbicides for agriculture; placing investment objectives in operation on planned schedules and achieving planned parameters, including for irrigation projects; providing appropriate equipment, and recruiting and training the necessary work force in proper time; and so on. This has imposed the use of the price system and other financial leverages to stimulate the development of the domestic production of industrial and agricultural raw materials, and in particular to surpass the production plan, as well as the creation of more advantageous conditions for credit allowances. Similarly, it is very important to assure the continued strong growth of incentives for the discovery of new useful mineral deposits, and their exploitation in the shortest possible time, in order to achieve approved technical-economic indicators, surpass the production plan provisions, and so on.

The relatively restricted resources available to our national economy, the limited currency resources which we can use and still maintain a currency balance, as well as the specific consumptions of energy which are still high in some cases, have imposed and continue to impose the introduction of severe restrictions on planned production levels for such products as: metals, petrochemicals, cement, some large metal consuming products of the machine building industry, some products of the light production industry, and so on. The establishment of these restrictions, which are underlined in the documents of the 12th Party Congress, naturally imply a long range view which takes into consideration the real possibilities for assuring

necessary raw materials from domestic production or from importation, the profitability of foreign trade in such raw materials and products, predictable trends in world prices, and the maximum valorification of the resources of which we can realistically dispose. A critical examination of these possibilities and trends could eventually end the restrictions placed on investments for the development of new production capabilities in a number of industrial branches.

In the same light, it appears equally significant to reduce specific energy and raw material consumptions, at least as much as is provided in the plan, which seriously implies the perfection of existing technologies and the development of new and superior ones, the design and adoption of new products with technical-economic parameters that are competitive on the world market, and shortening to a minimum the time necessary to assimilate and place the new products in fabrication. This is a vast undertaking, of broad conceptual proportions, and high technical and economic responsibility; it requires the judicious use of specialized staffs in the economy and each separate production unit, as well as a successful collaboration between research, education, and production.

The periodic, systematic review of technologies and all technical-economic documents which lie at the basis of product fabrication, and which are aimed at a maximum growth of economic efficiency, must be accompanied by a correlation of efficiency elements with the tasks stipulated in the plan.

Of course, the redesign of technologies, and the updating and constant improvement of all technical-economic documents which form the foundations of product fabrication, require a huge conception effort, as well as great deal of competence, perseverance, and innovative spirit, in order to overcome the inertia of some people toward change, and to convince and teach them to abandon some traditional procedures. The solution to this problem is to a large extent associated with a realistic determination of the amount of design work, the assurance of the necessary specialists by means of the plan, the rational utilization of the work force in the economy and in each enterprise, and the use of specific material incentives. At the same time, this assumes a strong development of domestic scientific research, particularly in the new production domains which are presently emerging in the world and which have development perspectives, so that it will become possible, at least in some sectors and for some products, for our country to achieve a certain technologic progress and a more advantageous position in international economic relations.

An analysis of the structure for future material production in the national economy in general, as affected by necessary material resource restrictions introduced at the present stage, calls for the use of modern instruments which will allow the formulation and selection of the most adequate variations. One such instrument is the balance of shares among branches, which was formulated in our country for the first time on the basis of 1970 data. The formulation and utilization of this balance on the basis of 1981 data, for production prices obtained during this year, would make it possible to create better conditions for analyzing the structure of the national economy development, as well as for improving the foundations of decisions in this domain.

The improvement of planning activities, and the judicious blending of central planning with enterprise autonomy, as well as the application of the principles of worker self-management and economic-financial self-administration, as highly important factors in achieving equilibrium in development, are intimately associated with the continued improvement of the system of plan indicators. The formulation of the plan understandably requires the use of a broad and rationally dimensioned range of plan indicators and quotas. In turn, the use of this system of plan indicators and quotas presumes a judiciously organized informational system capable of efficiently providing real data for the determination--with the least amount of error--of preliminary plan fulfillment figures.

The large number of indicators currently used for planning, as well as some duplications in this domain, would make it useful to carry out a critical analysis of correlations between compulsory plan indicators and plan quotas. In my opinion, an increase in the jurisdiction assigned to collective management organs in economic and sociocultural units at all levels, is expected to lead to a consolidation of economic-financial self-administration. I also believe that a reduction in the number of compulsory indicators approved for the central plan is possible in many areas.

Once the five-year and annual plans are approved, it is most important that changes to plan indicators be made only in cases of utmost necessity, when the material basis cannot be assured, or when the approved indicators for investment objectives placed in operation cannot be met on schedule, or when foreign market influences intervene, and which cannot be eliminated through the use of plan reserves. In any case, given the accumulated experience, economic units should be assisted in devoting greater attention to the formulation of measures for a rigorous fulfillment of the plan, while fully benefiting from the incentives provided for surpassing the plan under legal conditions. Naturally, greater emphasis must be placed on economic-financial leverages and banking control, so as to forestall the production of goods without assured distribution, the failure to achieve planned profits, failure to respect planned currency prices, and so on.

The fulfillment of the plan for all indicators assures a high efficiency for social labor, an essential condition for achieving the primary goal of our entire economic policy, which is an uninterrupted improvement in the standard of living. In final analysis, a high social labor efficiency is assured by man. That is why the plan seeks to create all the necessary conditions for properly training and improving the work force. Most significant in this respect are a continued modernization of the material basis of education at all levels, as well as that of research laboratories; a better and more efficient organization of technical and scientific documentation; a large scale dissemination and rapid application of inventions and efficient technologic innovations obtained throughout the world; exchanges of experience and specialization for the largest staffs, on mutually advantageous grounds, in institutions and enterprises here and abroad; and so on.

The problems of general economic equilibrium, of improved planning for our national economy, are of course extremely complex. The present article has sought to consider a necessarily small number of them, in a succinct manner. But in my opinion, they should receive a longer and more profound discussion, an assessment of the various possible opinions. I believe that the analysis of such problems by collective management organs in enterprises and institutions, as well as a greater contribution of scientific research in this domain, would help the continued improvement of methods for assuring the balanced, smooth, and efficient development of the national economy, and the continued improvement of scientific management of socioeconomic life.

IMPROVED EQUIPMENT SUPPLY TO MINING INDUSTRY ESSENTIAL

Bucharest REVISTA ECONOMICA in Romanian No 45, 6 Nov 81 pp 9-10

[Article by Marin Stefanache, director in the Ministry of Mines: "The Achievement of Coal Production Necessitates the Providing and Rational Utilization of the Technical-Material Supply"]

[Text] The development of the country's energy base to the level set for this 5-year period presupposes, among other things, the growth of coal production at a rate of over 20 percent, a rate that can and must be achieved both by putting the new production capacities into operation, using, maintaining and repairing better the equipment on hand and markedly increasing the labor productivity per man and work formation and by improving the technical-material supply of the necessities for each operation.

The raising of the economic activity to a qualitatively higher level and the growth of the efficiency in the context of the new economic and financial mechanism necessitate the strict and well-substantiated correlation of the technical-material supply with the production tasks, as well as the utilization of the means on hand and the available raw materials and supplies at a higher level, with maximum economic efficiency and productivity.

Correlations in the Dimensioning of Production and of Technical Equipping

The greater tasks that devolve upon the mining industry in the current 5-year period necessitated the preparation and substantiation of a program for equipping and mechanizing this sector of great importance for providing raw materials and fuel to the economy. The program contains the list of the basic technological and auxiliary implements, installations and equipment, according to suppliers and delivery dates, for all sectors of activity, including coal. In setting the equipment levels and selecting the types of equipment provided for assimilation into manufacture in the 1981-1985 period, the main objectives and plan targets were taken into account (Table 1).

The figures in the table show that coal production will register a 2.4-fold increase. This increase is based on introducing at suitable rates high-yield techniques and technologies both into the opening and preparation of the minework, in which an over 2-fold increase will be achieved, and especially of that in the mining faces, where the expansion of the extraction with mechanized complexes should provide a 2.5-fold rise, and the lignite production achieved in quarries with highly productive technologies should attain at least a 2.5-fold jump. It is clear that between the production set for each year of the period to which we are referring, and for all of the

current 5-year period, and the technical equipment expected to be provided there is a close correlation, a regularity that must be respected and put into practice in such a way as to not produce any kind of delay in supplying and operating the mechanized means and, in consequence, to not interrupt the coal production achieved in the mines and quarries.

Table 1. The Correlation of the Technical Equipping with the Production Tasks

Category	Achievements	Provisions		1985/1980 (in %)
	1980	1981	1985	
The development of coal production (thousands of tons)	35,240	42,186	85,600	240
The extraction of coal in faces equipped with mechanized complexes (thousands of tons)	12,457	17,900	31,000	250
The development of lignite production in quarries through mechanized technologies (thousands of tons)	10,317	20,955	37,365	360
The mechanized digging of opening and preparatory minework (thousands of cubic meters)	917	1,390	1,990	205

The supply plans are based on the provisions in the equipping and mechanization program, adapted to the investment documentation approved. In carrying out the mechanization program, significant efforts were made, which, in the 1978-1980 period, caused the units in the coal branch to receive from domestic sources and through importation 109 mechanized face complexes, 79 face combines and 35 heading combines. At the same time, the lignite quarries took possession of 11 technological lines, with another 6 rotor excavators and 3 dumping machines being in the process of installation. For the immediate or more remote period, the further assimilation of many pieces of equipment is planned, of which the following are more important: model SMA-P [expansion unknown] and CMA-P [expansion unknown] mechanized face complexes for the extraction of thin layers of bituminous coal and lignite, model SMA-5H and CMA-5L mechanized face complexes for thick layers of bituminous coal and lignite, face combines for the whole range of heights, from thin layers to the working height of 5.4 meters, model 470 bucket-rotor excavators for improving the lignite-extraction technologies and so on.

But in the supplying of equipment there still are some deficiencies, caused by:

The sometimes tardy finalization and giving of advice--by the design institutes, the mining combines and the specialized bodies in the ministry--regarding the investment documentation, it thus not being possible to issue the orders to the suppliers at the proper time;

The failure of the machine-building industry to provide equipment on schedule (face combines and complexes, trench excavators, vulcanizing apparatus, pit lamps and so on) or the failure to deliver other equipment in the order of installation (rotor excavators, combines, centrifugal pumps, motors and so on);

The transfer of the production of equipment from one supplier to another without ensuring continuity in manufacture and delivery to customers. Thus, some pumps from

Bucharest "Averga" were transferred to the Botosani IUPS Enterprise for Equipment and Spare Parts and the Medgidia IMU Metallurgical Equipment Enterprise, there thus being delays of over 1 year in the assimilation of their manufacture. The electropneumatic ventilators from Satu Mare "Unio" were transferred to the Ventilator Enterprise in Vaslui, which, besides the delay in assimilation, did not resolve certain aspects regarding quality;

The delivery of insufficiently inspected and adjusted installations and equipment. The necessary corrections requested by customers are not always made in the periods set, which hinders the mechanization of operations in the exploitation of coal. Consequently, we believe that the manufacturers of such equipment must respond to a greater extent to the justified demands concerning the functioning of the machines and installations delivered at the projected parameters and, together with the customers, must make every effort to remedy as soon as possible the defects pointed out and to put the respective equipment into operation.

Priorities for the Use of Equipment with Maximum Productivity

The efforts made to provide for the supplying of modern equipment, in order to introduce new technologies that would facilitate the operations with a high volume of labor and would provide a marked increase in productivity, have found a correspondent in the year-by-year increase in the degree of utilization and in their efficiency in the coal-extraction process. But these efforts have not always been supported by a corresponding concern on all levels for efficiently utilizing the technical equipment existing in the mining enterprises. This explains why, in some periods, the mechanized face complexes in the inventory, the face combines and the minework-digging combines are used only partially. On the other hand, with the equipment in operation, outputs below those planned are obtained—not in a few places—as a result of the frequent accidental interruptions in the operation of the technological equipment and the failure to properly maintain and repair it.

All these things have been the object of analyses at the level of the units and the ministry, with suitable measures being established for improving the activity in the respective field, of which we note:

1. The complete and regular fulfillment of the tasks with regard to assimilating and introducing into manufacture the machines, equipment and installations needed for mechanizing the minework, by testing and experimenting with the prototypes made and approving them, by the middle of 1982, and by making the improved prototypes of mechanized face complexes, organizing the experiments and approving them, by the end of the same year.
2. The continual improvement of the technical performances of the mining machines, equipment and installations and their quality and reliability, for which there must be: the organization of work conferences with the equipment designers, suppliers and customers regarding the qualitative deficiencies, including the interruptions due to the maintenance and operation of the equipment under the specific operating conditions; and actions regarding knowledge of the behavior of the equipment in operation, regarding documents in the field of the innovations appearing and regarding establishment of the necessary measures for modernizing the respective equipment.
3. The reduction of the accidental stoppages of equipment and installations, for which purpose it is necessary: to improve the quality of the mining chain and the

connective eyes for flight conveyors; to make as soon as possible the prototype of the vulcanizing installation and to supply to the mining units the tools and devices needed for properly organizing the activity of vulcanizing the rubber covers; to organize the activity of the whole existing stock of equipment on hand, there being drawn up the program for putting in working order particularly the hydraulic installations of the mechanized complexes; and to centralize in specialized units the manufacture of the gaskets for the whole range of hydraulic installations on the mining equipment.

4. The ensuring of the delivery of complete accessories, correlated with the dates for putting the planned capacities into operation. In order to do this, it is necessary to insist that the general suppliers keep track of the cooperation in production and that the stipulated sets be delivered on schedule, taking the necessary steps to make up the whole volume of arrears.

How Can the Spare Parts Be Provided?

In the mining industry, the level of stocking with equipment, machines and installations necessitates the manufacture, supplying and use of a large volume of spare parts, their value coming to over 1.5 billion lei in a year. Of them, 52 percent are made in its own units and the rest are furnished by the enterprises of the machine-building industry. In the preparation of the supply plans, however, some shortcomings are encountered, since lists of spare parts are not drawn up for the new equipment and, for the most part, they are not manufactured (for example, those for 50-ton dump trucks, A-3602 tractors and 2.4-cubic-meter excavators, which also have imported components). In order to reduce the dependency on suppliers for the supply some less complex spare parts are made and assimilation and, in particular, reconditioning are done in the units of the Ministry of Mines. The volume of the latter in 1982, for example, will be over 50 percent higher than in 1980. Special attention is being devoted to the assimilation of spare parts for imported equipment and installations, an action that is reflected in the reduction of the valuta effort (Table 2).

Table 2. The Reduction of the Valuta Effort for the Procurement of Spare Parts
(1980 = 100)

<u>Specification</u>	<u>1982 (in %)</u>
Spare parts for complexes and combines	48
Spare parts for extraction machines, pumps, ventilators, compressors	78
Spare parts for rotor excavators, dumping machines, (foreze)	68
Spare parts for (trafo), electric cells, rectifiers, automation elements	49
Spare parts for laboratory apparatus and computers	42
Spare parts for automotive repairs, excavators, cranes	44

Nevertheless, in the first 9 months of this year, too, as in past years, one notes that, in general, the deliveries of spare parts from the equipment suppliers were not achieved in conformity with the timetables, especially for mining equipment, where the arrears for the main components are 20 percent on the average, which leads to tieups of equipment, the failure to make the scheduled repairs and, ultimately, the failure to achieve the planned output.

In order to improve the situation in this regard, energetic measures that would eliminate some harmful practices are necessary. In this regard, the following are required:

The more precise establishment, by the specialized bodies, of the list of the parts that cannot be imported in the necessary quantities and the undertaking of the prompt assimilation of them;

The organization, by the Ministry of the Machine Building Industry (taking into account some discontinuations of the importation of equipment), of the production of spare parts for that on hand, adapting the indicators of the producing plants to the new structure of their production;

The supplying, for all new equipment assimilated, of indispensable spare parts whose price would be included in the cost of the equipment;

The takeover of a wider and more complex range of spare parts for execution in the units of the Ministry of Mines (through the development and tooling of its own plants).

The Supplies--Delivered on Time, Managed Efficiently

Although the mining industry is one of the biggest suppliers of raw materials for all economic sectors and branches, it is feeling the lack of special supplies that it cannot procure by itself. This is happening because some specialized enterprises are not achieving in the necessary time the assimilation targets set. This is the case with, among other things, the model D mining chain for flight conveyors, the steel section for reinforcing the minework under high-pressure conditions, and seamless pipe for hydraulic props--obligations assumed by the metallurgical industry--and the gaskets, the hose, the general-purpose rubber covers with big widths, the fireproof and antistatic rubber covers, and the solution for the cold-joining of rubber covers--tasks that devolve upon the chemical industries. Under these conditions, the producing units, the customer units and other elements of the technical-material-supply system must act steadily and quickly to assimilate and approve the scarce supplies, without which the production process encounters serious difficulties.

Analyzing, at the same time, the manner of fulfillment of the targets for recovery and delivery of reusable materials by the mining units--steel, used mineral oil, tires for retreading--it must be pointed out that there are some lags in this branch. Thus, in the first 9 months of 1981, the target for recovery and delivery of reusable materials to the collection enterprises was fulfilled only to the degree of 72-85 percent, with the recovery measures being intensified in the last part of the year, so that the obligations may be met completely.

The improvement of the supplying of materials in the mining field necessitates the taking of steps, of which the following seem to be more important:

The assignment of the quotas on the basis of the substantiations presented, after a thorough check, depending on the volume of production and the consumption standards, there being given up the statistical method applied in some situations;

The complete concluding of contracts by the supplying units for the allotments received. However, these units must provide earlier their production capacities needed for honoring the allotments given by the balance coordinators;

The matter of assimilating and producing in the country, as soon as possible and with suitable quality, the scarce supplies that are now procured through importation;

The utilization of recoverable materials to a greater extent by the mining units through the organization of belt- and cable-vulcanizing activities, the reconditioning of the metal reinforcements and the mine rail, and so on.

The intensification of the efforts of the suppliers of equipment, spare parts and materials, so that the contractual obligations may be met on time, and the combining of them with those of the miners to provide the production capacities and to rationally and efficiently use the technical-material base are creating the necessary conditions for fulfilling the coal-production plan, for satisfying the current requirements of the country's economy in this regard.

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USE OF ALTERNATE ENERGY SOURCES EXPLORED

Bucharest REVISTA ECONOMICA in Romanian No 45, 6 Nov 81 pp 11-12

[Article by Dr Eng Marius Dancila: "Requirements and Possibilities of Better Utilization of New Energy Sources"]

[Text] The energy situation in recent years, caused by the prospect of the depletion, in the foreseeable future, of the main source of energy that mankind now uses—crude oil—(under the conditions of the maintenance of the current rate of consumption), has also brought to the attention of the political decisionmaking factors, the economists and the power engineers the advisability of utilizing other sources of energy, less or not at all used thus far, called generically "new, renewable sources." Viewed as technical curiosities only two decades ago, researched and—pretentiously said—developed more out of scientific considerations than for their technical reliability, the new sources of energy did not find the confirmation of their economic role except after the shock of the onset of the energy crisis in 1973. Sources still prohibitive from the viewpoint of the investment costs needed for utilizing them on an industrial scale, they have very rapidly covered the path to the ways of profitability in the past decade. In relation to just this criterion of evaluation, their percentage tends to become quantifiable in the energy scenarios drawn up for future periods, even in industrially developed countries, whose power-generation sector has been based predominantly on classic factors of primary energy thus far.

Starting from the necessity of providing the sources of energy for the fast economic and social progress of our country, the farsighted documents of the 12th Congress of the Romanian Communist Party, and among them, from a viewpoint of the energy policy, particularly the Directive Program for Research and Development in the Field of Energy in the 1981-1990 Period and the Main Orientations up to the Year 2000, establish the basic tasks with regard to providing the energy resources needed for rapidly developing the economy. The intensification of the concerns involving the utilization of unconventional sources of energy is also among the objectives considered—along with actions by means of which there are pursued the improvement of the organization of the national electric-power system, the matter of managing with maximum efficiency the entire power-generation potential that our country possesses, the rationalization of the production processes by continually reducing the energy consumption in all fields of activity, and so on. What are the ways by means of which, in the Romanian energy strategy, there is being pursued the growth of the participation of the new sources in providing the energy support for development in this 5-year period and, from a wider perspective, what is the level of the current achievements and how will the research activity be oriented?—these are a few problems on which we will try to dwell within the present article.

The New Sources--a Component Part of the Energy Support for Development

In contrast to the classic energy solutions, in the field of the new, unconventional sources and technologies--as, in fact, in other fields still in an initial stage of development--the providing of economic competitiveness and the reduction of the specific investment and the material resources needed, especially the energy-intensive ones, through new technical solutions that would permit the growth of the equipment's power outputs and reliability, through dimensional optimizations, through the devising of new technologies for achievement, through the typification of the dimensions and so on, are an essential objective. In past decades, the growth of the percentage of hydrocarbons in meeting the need for primary energy led to a drop in the interest in other energy bearers. Petroleum and natural gas were the ideal source of energy for creating a modern power-generation infrastructure that was able to provide rapid economic development in a short time. At the same time, the solutions adopted involved relatively small investments, with short amortization periods. However, the power systems based on this "monoculture of hydrocarbons" now seem to be elements with considerable inertia, whose modification can be done with high costs and in time, with the reduction of the dependency on hydrocarbons involving changes not only at the level of the power system as such but also at the production level, with many production technologies being adapted to the utilization of this category of fuels.

It is the incontestable merit of our state's energy policy to have promoted, in the past 15 years, a suitable way of development, by intensifying the efforts to utilize particularly its own coal reserves and hydropower potential, thus reducing the power-generation sector's dependency on the hydrocarbon market. Thus, the economic conditions suited to the penetration, on a national scale, of the new energy technologies, of the methods of utilizing the new, unconventional sources of energy, were foreshadowed even before the onset of the energy crisis. In this way, the foundations have been laid for a technical and organizational structure within which the curve, rising in time, of the costs of the energy obtained with classic solutions would intersect the evolution, falling in time, of the costs of the energy obtained with various new types of energy sources and technologies. In other words, there is being provided the interval of time needed for widely promoting the technical solutions in the field of the new sources of energy, within the limits of the production capacities and the specific raw materials that will be able to be allocated and within the limits of the national power-generation potential available for each type of new source.*

* Until reaching maturity or, in other words, in the process of going from a potential to a technical reality and economic competitiveness, the new proposals and ideas in power generation always go through a number of stages or levels of acceptability, characterized by a multitude of restrictions. Schematically, these levels of acceptability appear as follows: scientific acceptability--without which it is not possible to undertake discussion of the idea, an idea that must be compatible with the laws of general evolution of scientific thought; technological acceptability--a level at which the possibility of turning the idea into a reality (the prototype phase) is analyzed, that is, the proposal's compatibility with the economy's structure and technological possibilities in a given stage; industrial acceptability--a level that is reached when a number of restrictions of a technological nature with a temporary and relative value have been overcome, with the proposed objective being able to be achieved with industrial procedures, using available raw materials for this purpose; economic acceptability--a very important stage that involves the attainment of economic efficiency indicators competitive with those of classic

Among the new sources, geothermal energy has occupied thus far the leading spot under our country's conditions, it being at present the only one economically competitive with the classic heat-production solutions. However, its utilization is limited to the zones in which resources of geothermal water have been identified and evaluated (especially in the counties in the western part of the country). Thus far possessing approved reserves corresponding to a usable energy equivalent of about 700,000 tons of conventional fuel per year, the program provides for the expansion of the applications so as to go from about 120,000 tons of conventional fuel in 1980 to an annual contribution of about 500,000 tons of conventional fuel in 1985. The economic efficiency of the installations for making use of geothermal water must be analyzed in detail, for each site, with the level of efficiency being determined both by the source's temperature and by the salt content, which, in its turn, influences substantially the efforts needed to keep the producing installations in operation.

Besides the expansion of the range of facilities with thermal applications--such as the industrial uses employing low-temperature water, the applications in the agricultural and zootechnical sector, for the heating of spaces and the preparation of sanitary hot water for domestic use--the research in progress also involves the production of electric power, with low-capacity freon or isobutane turbogenerator installations for isolated consumers.

Under our country's climatic and geographical conditions, the uses of solar energy--an energy source with a theoretically high potential compared to that of the other unconventional sources but with a low specific unit power--favor low-power facilities for utilization and decentralized electric-power or heat production. In an initial stage--already in the phase of generalization--solar energy finds applications in the preparation of hot water for consumption, also participating in meeting part of the need for heat for the heating of dwelling spaces and industrial spaces, and in the industrial processes with a low thermal potential, with temperatures below 80°C.

Analyzing the structure of the energy consumption, on a national level, from the viewpoint of the main forms of energy-bearing substances consumed, one notes that, in 1980, about 26.5 percent of the fuel was consumed for electric-power production, 22 percent as raw material in industry and for non-power-producing purposes and 51.5 percent in the form of heat, including about half at a low potential (below 200°C). From precisely this perspective, we feel that in the field of the utilization of low-potential heat, in which there are included as main elements the preparation of domestic hot water, urban and industrial heating and the technological processes that require low-potential heat (washing, drying, dehydration and so on), solar energy will find a wide field of applicability in the future.* Regarding the conversion of solar energy into electric power, about 0.5 percent of the total area of the country

solutions, regarded already as being "mature"; social acceptability--a stage that presupposes the conscious adherence of the majority of society, for the purpose of achieving the objective in view as far back as in the first stage: the idea's compatibility with the conception of general development of society.

* Solar heating of domestic hot water is gaining more and more ground, it now being the solution in the course of implementation in over 1,400 apartments in Timisoara, Constanta and localities in 5 other counties of the country. In Bucharest, in the Baneasa zone without district heating, the construction of over 1,000 apartments possessing the same type of technological equipment will be finished in 1981.

is estimated as a technically feasible potential, it clearly being a question of zones unfit for agricultural crops or other more advantageous uses of the land. Under our country's conditions, with an average specific electric-power output of about 275 kilowatt-hours per active square meter per year (using both the procedure of thermodynamic conversion and that of direct photovoltaic conversion, considering for both solutions an average gross output of 15 percent), it is possible, theoretically, to obtain a total electric-power output of 77 billion kilowatt-hours per year (in a ratio of $S \sqrt{\text{area}} / \text{total employed/active } S = 4.25$).

Taking into account the evolution of the technologies and the possible conditions for implementing the solar-electric power stations (with a thermodynamic cycle and with direct photovoltaic conversion), it is predicted that an installed power of about 200 megawatts of electric power, a figure that represents the upper level of the economically feasible potential at the end of the century, will be in operation in the year 2000. An initial facility--the experimental solar power station of 30 kilowatts of electric power--was put into operation this year by the Institute for Energy Research and Modernization in Bucharest. Although modest in terms of parameters--in comparison with the classic high-output electric power stations--this materialization of our own research, achieved completely with equipment and subassemblies of Romanian devising and make, represents the first concrete step taken in our country in the field of solar-electric power generation. The merit is all the greater because, from a technological viewpoint, for this type of facility, the solar power station is on a par with similar achievements in countries that possess a considerably greater technical potential. The research program in progress also provides for the achievement of a high-output solar power station (1 megawatt of electric power), according to the concept of a central tower and focusing heliostats, by 1985.

We ought to mention the fact that the technologies for achieving the high-output solar-electric power stations are still far from the threshold of technical and economic maturity and not competitive with the classic solutions at present. However, it is felt that the potential of the source--solar energy--justifies the efforts made from now on in the area of technological research and development in this field. The transition to high-capacity industrial installations for electric-power production is considered possible after 1990.

Regarding wind energy, under our country's climatic conditions, in most cases this indirect form of manifestation of solar energy has an intermittent, unstable character, with big seasonal variations. Apart from the applications in the case of isolated consumers, the contribution of this form of energy to the electric-power system, on the basis of the current technologies, cannot be made except by means of hydraulic accumulation, through pumping, within the existing hydropower facilities.

The achievement of the first horizontal-shaft aerogenerator having an output of 20 kilowatts of electric power, installed at the testing grounds in the Petrimanu massif (near the Lotru hydropower facility), undergoing technological tests at present, goes into this category of facilities. The research in progress is pursuing the expansion of the range of rated powers, so that the conditions for achieving aerogenerators with outputs of up to 1,000 kilowatts of electric power may be provided during the current 5-year period.

The technically feasible potential of wind energy is given by the possible sites for collecting and converting this form of energy, also taking into account the

possibilities of setting up the pumping stations and of operating them, as well as the requirements regarding environmental protection. In establishing the economic efficiency, it is also necessary to take into consideration the material and financial effort for achieving the adjacent accumulation and pumping stations. It is predicted that the energy utilized with wind turbines will grow from 500 tons of conventional fuel per year in 1981 to 60,000 tons of conventional fuel per year in 1989. The research objectives involve the improvement of slow variable-geometry aerogenerators, of turbines with a vertical and horizontal shaft and so on.

Among the other new sources, the use of biomass especially for the production of synthetic fuel is proving to be promising under our country's conditions. The energy contribution of the biogas resulting from the processing of animal wastes, of residues from agriculture and the food industry and of sludge arising in the plants for treatment of urban residual water will reach the figure of about 450,000 tons of conventional fuel per year in the year 2000. Regarding the energy potential of the waves on the Black Sea, in the area of the Romanian coast, it is estimated that its gross value is relatively low--with the possibilities of utilization in power generation being able to be concretized especially in isolated low-power facilities.

New Elements in the Equation for the Organization of the National Power System

While classic power generation has demonstrated its maximum economic efficiency in the form of systems of high-power installations, interconnected by networks of high-voltage powerlines, under the conditions of the promotion of the new energy sources, the options are becoming diversified, with a number of established solutions coming to be reconsidered. For example, the current technologies for collecting solar energy are suited especially to decentralized installations of limited power. The raising of the capacity of the installations can be achieved only extensively, without thereby justifying the achievement of centralized high-power installations or of the transmission and distribution of the power produced. The installations driven by windpower allow the advantageous use of the mechanical power obtained, for example, for pumping water or generating electric power, also in a decentralized fashion, in low-power installations. At the same time, however, attempts are being made on a world level to achieve "giant" windpower installations of 1-2 megawatts of electric power. Similar trends are also appearing in the case of other energy sources. In fact, there is appearing a veritable symbiosis between "hard" power generation and the new sources, usable mainly with "soft" technologies, scattered territorially due to the dispersed character of the sources, with both complementing each other.

As a characteristic of the scientific activity in the energy field, its branching in many directions can be seen. The first, better known, has as an objective the devising of the concrete technical solutions for equipment and installations and the organization of the power system as a whole. The complexity and the systemic character of the energy problem necessitate at least one more essential attribute of the science of power generation, that of helping to substantiate and optimize the decisions regarding the organization of the national power system by combining flexibly, and i. a prospective view, the classic power-generation structures with the new ones, under the conditions of providing for as efficient utilization as possible of the power at the level of the national economic complex.

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CSO: 2700/96

PRIVATE SECTOR AGRICULTURAL DEVELOPMENT IN MOUNTAIN AREAS

Bucharest REVISTA ECONOMICA in Romanian No 46, 13 Nov 81 pp 13-14, 16

[Article by N. Brasoveanu]

[Text] Agriculture is a basic branch in the general strategy of our party and state for development of all branches of material production, with its being given priority attention in this five-year plan as one of the main and permanent resources for economic growth in general and for providing food for the population and a broad range of raw materials for industry in particular. Having as its end a rise in agriculture's contribution within the national economy, the new agrarian revolution is emphasizing the orientation toward the need for necessary conditions to be ensured, parallel with the development of state and cooperative agriculture, for increasing agricultural production on the population's farms, too, within which a large place is held by the individual agricultural farms situated predominantly in the hill and mountain areas.

In its geographic position in the zone of interpenetration of Europe's large geographic units, by its temperate continental climate and the quality of its land, which is fertile for the most part, Romania's territory presents favorable conditions for the economic development of all the country's natural zones, including the hill and mountain regions. This territory has the following distribution by large areas of relief: the mountains occupy around 30 percent, the hills--approximately 37 percent and the fields--33 percent.

The hill and mountain zones occupy 44 percent of the country's agricultural area.

Economical Sizes for the Agriculture of Individual Farms

As an important component of the fourth sector of agriculture, the individual agricultural farms play an important social-economic role, together with the individual plots of the agricultural production cooperative members and farms of worker personnel in the rural environment, holding approximately 1.7 million hectares of agricultural land (of which 490,000 are arable, 560,000 are pastures, 670,000 are hayfields, 57,000 are orchards, 11,000 are vineyards) and a large number of animals (approximately 1 million cattle, 2.3 million sheeps, 900,000 hogs and around 11 million chickens).

Under the conditions of the state's contribution with superior biological material, average per hectare production in the 1965-1980 period rose from 5.5 to 12.3 tons for potatoes, from 6.6 to 15.0 tons for vegetables, while average animal production

rose from 1,294 to 2,363 liters per cow for milk, from 1.8 kg per sheep to 2.3 kg for wool, from 86 eggs per hen to 134 for eggs and from 10 kg to 17 kg for honey (from one family of bees). The production ceilings obtained by the individual agricultural farms are approaching some of the vegetable products and the majority of animal products are approaching the levels obtained for agriculture as a whole, with its being exceeded substantially for cow's milk. These achievements, obtained under conditions of a material-technical base which is much below what socialist agriculture has available, show the viability of the agricultural system practiced by the individual farms, which fully utilizes the natural hayfields as the material support for their economic activity and the barn waste as the pivot point for the fertilization process. In this context, against the backdrop of the main job of agriculture of providing the products needed for normal physiological consumption by all the population, the increase in animal and fruit production--decisive directions for the development of agriculture in the hill and mountain areas--emphasizes the important place and role of the individual agricultural farms in these zones in providing quantity and the qualitative structure needed for the food ration, which requires a greater proportion of animal products, fruits and vegetables.

At the level of the economic resources mentioned and in the agricultural system practiced, the individual agricultural farms are producing the following of total production for the country: approximately 7 percent of wheat and corn, 23 percent of potatoes, 9 percent of vegetables, 28 percent of fruit, 19 percent of milk, 12 percent of wool and 16 percent of the eggs. However, we should note that, compared with the quantity of production achieved, this agricultural sector is participating in the state fund with proportionally and considerably lower shares, particularly for milk and wool. Thus, we have large reserves for having the individual farms use certain agricultural products in the state's centralized fund, which would more substantially include the sector of small production of goods from agriculture in the area of provisions of the normative acts for establishment, distribution and use of resources in the counties to supply the population with meat, milk, vegetables and fruit within the sphere of measures established through the recent Council of State decrees on self-leadership and territorial self-supply as well as on providing agricultural products under good conditions.

The 1,561,000 individual agricultural farms located in 373 completely cooperativized localities and 227 partially cooperativized localities total a population of approximately 3.5 million people, of which, however, 62 percent are incapable of working (children and the elderly), with this characteristic of the structure of the labor force having clear economic and social implications.

Characteristics of the Natural, Economic and Social Framework

The high degree to which they are divided into lots and the high level of the incline create conditions which are less favorable to carrying out profitable agricultural activity in the mountain zones. As an example, we mention that the maximum areas for the individual farm lots in Bistrita-Nasaud County vary by categories of use between .01 hectares for arable and .07 hectares for hayfields. In the same county, 83 percent of arable land and 100 percent of the vineyards in this agricultural sector are located on territories with a 19-26-percent incline and nearly 10 percent are also on territories with more than a 26-percent incline. The ground is poorly fertile, with excessive moisture and acids.

Under these conditions of the natural framework, the mountain areas in the process of economic growth for agriculture as a whole enter into an unequal competition as far as the possibilities with the other regions in the country, a fact because of which the individual agricultural farms in the hill and mountain areas must be helped by society. In this regard, the UN Food and Agricultural Organization program for development of the disfavored regions does not consider the state's aid for profitability of mountain agriculture as a subsistence allocation but as a means of compensating for the high costs and reduced level of production, with the goal of providing incentives for the farmers in these areas for fuller utilization of the natural and human resources. In the same framework of the problem we mention that Comrade Nicolae Ceausescu's profoundly humanist concept of the development of agriculture in the hill and mountain areas regarding the need for homogenization socially and economically at the territorial level and the need for equality primarily in the economic area lies at the base of our state's policy, emphasizing that there cannot be equality where there is economic inequality.

Whereas, due to the difference between working time and production time in agriculture in general, the stock of time is utilized incompletely, for the hill and mountain areas--as an effect of the relatively less intensive nature of the agriculture--the working time on the individual agricultural farms is of a pronouncedly partial nature. So, we have around a 40-percent utilization of their total stock of time, making a ratio between the total volume of work on the individual agricultural farms and the potential of annual work of the existing labor force. Under these conditions, the noncooperativized agriculture in these areas constantly frees the labor force for nonagricultural activities. Only to have the quality of the labor force remaining in agriculture deteriorate, establishing a process of growing older and more of them being women, in a number of hill-mountain locations, due to the too intense fluxes of migration of the agricultural population capable of working, particularly of the men. Within the phenomenon of migration of the agrarian population from the noncooperativized area of agriculture, temporary migration, in the form of daily or weekly commuting, is being seen more frequently.

With a view to establishing the labor force in the area needed to develop animal raising and fruit-tree growing--basic branches of agriculture on the individual agricultural farms--some complementary agricultural and nonagricultural activities are being practiced and must be intensified, such as artisan craftsman's work, gardening, beekeeping, sericulture, raising small animals for fur and meat. The organization of an adequate economic framework is being proposed, one which permits providing a volume of work in the noncooperativized locations according to the labor force potential existing in these locations through diversification of the jobs in the following ways: organization, transfer and development of industrial activities, thus setting up projects in the noncooperativized areas; utilizing agricultural producers as forestry workers and cart drivers in the units for wood exploitation and processing; the organization of activities for processing and superior utilization of local raw materials and bringing up to date the traditional jobs in preparing certain milk products, various varieties of cheese and certain meat preparations; extending craftsman's activities (woodworking, wheelwright's work, ironmongery, locksmith's trade and so forth) as well as artisan work, providing services, with all these to be carried out in craftsmen's workshops, particularly work at home; the organization of tourist activity in the mountain locations with scenery value by providing the necessary comfort on the individual farms.

Zonal Types of Agriculture

Against the backdrop of the zonal nature of agriculture, determined by the natural, economic and social conditions, certain types of agriculture also are formed in the sector of individual agricultural farms, characterized by different structures of production. The determination of them has been made in selecting the substantiation for the territorial plan, differentiated by territory with regard to the structure and production ceiling, leading to the orientation of the structures and sizes of the contracts for the state fund and bringing directions and forms of cooperation between the individual agricultural farms and the socialist agricultural enterprises. The types of agriculture by territory of the individual agricultural farms, as mentioned in the table, have been determined in this selection.

With regard to the structure of the categories of use, the moderate continental climate of the Carpathian Transylvanian arc--characterized by the lack of heat and by excessive humidity, favoring large pastures--brings a predominantly pastoral agricultural production, along with tree growing. The continental climate with shades of excessiveness in the hill and mountain area in Oltenia, Muntenia and Moldova, bringing a more favorable hydrothermal relationship, leads to a more complex type of agriculture (pastoral-tree growing, agricultural).

With regard to the structure of the crops, we note at the national level a reduced proportion of grain in relationship to corn, which occupies more than half of total arable land. Territorially, both in the mountain areas as well as the plateau and plains areas, we find grain with a considerably greater share of the territorial area of Transylvania and Banat, while grain is merely symbolic in the agricultural areas of Oltenia, Muntenia, Moldova and Dobrogea. The factor of tradition partially explains such different proportions for the grain crop, under conditions in which the favorability of this crop is much greater in the last zones mentioned.

The generally reduced economic sizes of the grain crop currently on the individual agricultural farms are due to a number of socio-economic factors. The peasants in the noncooperativized zones of agriculture--particularly those working in nonagricultural activity in the cities but who live in the rural areas--until now were being supplied with flour, bread and other bread products from the village stores or from the city, thus not being given incentives to grow grain on the land which was their individual property. At the same time, the lack of means for job mechanization, which this crop requires, in the situation of the lack of capable labor force and necessary teams, is an important cause which has hindered the general extending of stalky grain crops, even rye, spring barley and oats, crops which find in these areas relatively better conditions for the crop than grain. The nonexistence of sowing machinery and reapers with animal traction and threshers, in the situation where the agricultural mechanization stations were not participating at all in the jobs or were doing them in an insignificant proportion, thus is one of the main limiting factors in extending the crop of stalky grains on the individual agricultural farms.

In the spirit of indications of the party's secretary general, it is necessary to speed up the application of a number of measures, starting with the mass introduction of grain varieties which are proper for mountain agriculture and ending with a more substantial contribution from the state units in the mechanization process and in supplying machinery for animal traction, with manual tools, pesticides and chemical fertilizers.

A reconsideration of the place for this crop in the agriculture of the hill and mountain zones will permit the individual agricultural farms to welcome the measures provided in the recent Council of State decree on providing quantities of bread and flour as completions from the state fund. The presence of the stalky grains in greater proportions also would mean a greater quantity of bran--a particularly important end under conditions of the insufficient supply of this category of agricultural farm with concentrated fodder.

At the same time, we find a very large percentage of corn, even exceeding the proportions appropriate for this crop in the irrigated agriculture of the plains areas. Clearly, at the level of reduced average production and big requests for this product (both for animal food as well as for industrialization and for human food), the individual agricultural farms are applying an extensive system, broadening the area meant for it with the purpose of satisfying the consumption needs as fully as possible. But this kind of economic practice includes a large element of risk, with the climate factors not justifying this kinds of sizes for this crop in mountain agriculture; most years corn did not reach maturity. Under these conditions, we feel that the state's contribution to providing individual peasants in the hill and mountain areas with corn should be more differentiated in proportion to the favorability of this crop on the territory. Reducing the percentage of corn in hill and mountain agriculture to the proportions determined by the ecological conditions would allow introduction of the rape crop for oil and of sugar beet in greater dimensions, thus facilitating the self-supply of this category of farm with oil and sugar.

By generalizing the aspects presented for organization of agricultural production on the individual farms in the hill and mountain zone we find that the main component of vegetable production is the meadows, and the crops which meet favorable ecological conditions are potatoes, oats, rye, grain and barley (especially the spring barley), beets, turnips, fodder cabbage and psychrophyll vegetables.

It is also planned to extend beans, potatoes and squash for the crops to be inserted. With the goal of providing the protein contribution to the animals' food, it is proving necessary to extend the red and white clover up to an altitude of around 1,200 meters.

Integration of the Process of Economic Growth

Considering that at the regional level the backwardness or development is a total phenomenon, the approach to the process of economic growth must be zonal and integral, viewing the economic and social activity of the entire given territory, of all the branches, for this purpose requiring that certain industrial, craftsmen's and service activities enter the rural environment. In order not to have agriculture suffer the influence of certain tieups upstream and down, it is necessary for it to be organically integrated into a program or plan for overall development of the rural environment, which would permit the supply of agriculture with necessary products and for the processing and sale of the agricultural products. In this context, proceeding from the consideration that an interaction--which causes a vicious circle--exists in the mountain area between total subdevelopment on one hand and the lag of agriculture on the other, the agriculture of this area can only be viable with the condition that it be integrated with total social-economic development, which also means achieving an adequate economic infrastructure--roads, local supply with water, providing of electric energy (primarily through utilization of water and wind force).

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Jan. 15, 1982

